

Exhibit B

29250-001071

Lucent Technologies
Bell Labs Innovations



Lucent Technologies Inc.
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August 14, 2003

Via US Mail and Facsimile - 703-668-8200 (11 pages)

Gary D. Yacura
Harness Dickey & Pierce PLC
11730 Plaza America Drive
Suite 600
Reston, VA 20190

Dear Mr. Yacura:

Re: IDS 125812

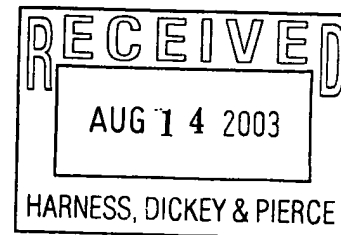
Attached is IDS 125812. As discussed, this submission must be filed in the U. S. Patent Office by **August 25, 2003**.

I am the Managing Attorney for this application, and if you have any questions, please contact me at **973-386-8803**.

Very truly yours,

Ozer M. N. Teitelbaum

Encs.
As above



SUBMISSION NO. : 125812
ATTORNEY : Teitelbaum, Ozer M.N.
TITLE :

Enhanced Uplink Dedicate Control Channel (EU-DPCCH)

-----MAIN INFORMATION-----

ITEM STATUS	: Open	LUCENT RATING	: II
STATUS DATE	: 5/28/03	GOVT. CONTRACT	: N
OPEN DATE	: 5/28/03	TYPE	: Patentability
CLOSE DATE	:	DEADLINE DATE	: 8/25/03
CLASS CODE	: II	TECHNOLOGY	: Wireless Infrastructure
BU CODES(S)	:	OWNER	: Lucent

FOREIGN FILING RECOMMENDATION:
Undetermined

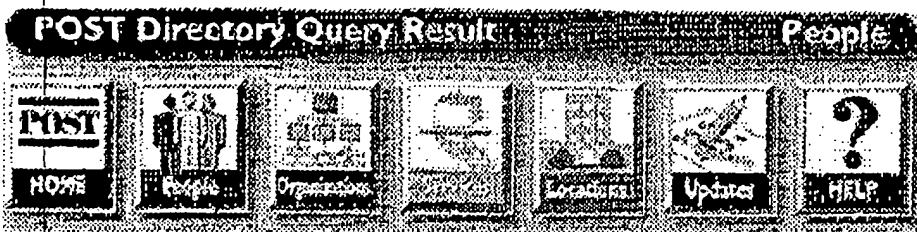
-----EURO SUBMISSION REVIEW INFORMATION-----

CURRENT STATUS :	ACTION TAKEN BY :
PATENT LIAISON :	PRIORITY CODE : 0

-----SUBMITTER INFORMATION-----

SUBMITTER NAME : Liu, Jung-Tao
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DIRECTOR : P. M. Mankiewich

Brief Description:



Name: Liu, Jung-Tao (Jung-Tao) **Update data for this entry:** [Location](#)
Job Family: Engineering Services **Job Function:** Rf Engineering
Bus Title: **Job:** Professional (013987) **Job Type:** IC
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Home Page URL: <http://nwswww.wh.lucent.com/~jtl>
Supervisor: [Rudrapatna, Ashok N \[1403924\]](#) **Supervisor's Hierarchy:** [listing](#)
Alternate Contact:
Dept/Cost Ctr: [10016479](#) (SFUS-Wireless Systems Core Tec) **Dept/CC Hierarchy:** [listi](#)
Dept/CC BUnit: [SF11000000](#) (SF-MOBILITY CORE SUPPORT)
Dept/CC BGroup: [SF10000000](#) (S2-JIM BREWINGTON)
Dept/CC BSeg: [S200000000](#) (S0-BOB HOLDER COO)
Company: T01: Lucent Technologies Inc. (L)
Worker Status: A (Active) **Worker Class:** **Personnel Status:** E (Employee)
Data Source: GPN (PeopleSoft/North America) **Entry Type:** Primary

Your query matched 1 entry.

Key to special symbols: % = non-employee worker (e.g., contractor), + = not yet on payroll, # = leave-of-absence,
 & = non-consolidated joint venture, \$ = non-Lucent (divestiture or sale), 2 = second entry to provide supplementary
 information.

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Lucent Technologies - Proprietary
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17

5/28/03

Wireless Invention Submission Process

- Complete the Invention Submission Form (see below).
- A separate Wireless Inventor Information Form needs to be completed by each inventor (attached).
- Please attach all Wireless Inventor Information Forms, any memos, sketches, lab notebook entries, etc., to the Wireless Invention Submission Form (see below).
- Forward the completed package to Margaret Cardoso, Room 6B-114, Whippany, NJ 07981.

QUESTIONS???

mcardoso@lucent.com

Please contact Margaret Cardoso at (973) 386-3957 or via e-mail at

Wireless Invention Submission Form

Answer all questions below as completely and accurately as possible. Please assume that the recipient has a basic understanding of telecommunication technology in general, but is not a specialist in your field. This information is required in order to determine whether a patent application should be filed.

1. Title: Enhanced Uplink Dedicate Control Channel (EU-DPCCH)

Uplink signaling channels for high speed dedicated transport channels in UMTS

2. Plans for publication, submission to others outside of Lucent.

 None

 X Uncertain

 to be published (date) _____ in _____

3. What is the problem you are trying to solve? In your answer, please start with a general description of the subject area and progress from there to the specific technical issues.

Enhanced Uplink in UMTS needs an uplink control channel associated with the data channel, E-DPDCH, to carry the necessary control information on the uplink. We propose a uplink control, namely, the EU-DPCCH, which can be used to send control information for high speed data on the uplink in both the scheduled and rate-controlled modes. Detail is described in section 4.

4. Explain your solution. Attach any sketches, lab notebook entries, TMs, etc., which help describe and illustrate the solution. Please include any references cited.

The EU-DPCCH is the only uplink control channel. It carries control information both for the scheduled mode and the rate-controlled mode. If the rate-controlled and scheduled mode cannot be multiplex onto the same CCTrCH, then UE can only operate in one mode at any given time and the two modes have to share the same physical channel in a mutually exclusive way. On the other hand, if EU-DPCCH on the uplink is shared by both modes, then a rate matching

algorithm similar to the Rel99/Rel4/Rel5 (exclude HS-DSCH) is needed to multiplex the two transport channels, i.e. the EU-DCH-rc and EU-DCH-sc onto one CCTrCH. Given the fact that multiplexing the two EU-DCH transport channels onto one CCTrCh impose unnecessary complexity for the noise rise management as well as the HARQ operations, we suggest that only one mode can be mapped onto a single CCTrCH. The main function of the EU-DPCCH is to signal the following control information:

for the scheduled mode:

- Redundancy version – 3 bits
- Transport format – 3 bits
- Transport block size – 3 bits
- MAC-UE-sc buffer status – 3 bits
- Pilot transmit power information – 6 bits

for the rate-controlled mode:

- Redundancy version – 3 bits
- Transport format – 3 bits
- Transport block size – 3 bits
- HARQ Channel ID – 2 bits
- New data indicator – 1 bit

Also, when not associated with any EU-DPDCH, EU-DPCCH is used to report the following to the Node B for scheduling:

- MAC-EU-sc buffer status
- Pilot transmit power information
- Data Priority level

Table 1 illustrates the physical channel structures for EU-DPCCH for UE operating in different modes. Note that we allow up to four HARQ channels in rate-controlled mode while there can be a maximum of eight HARQ channels for UEs in scheduled mode. Since UE buffer status and pilot transmit power information is needed periodically at the Node B to perform the scheduling. UE in scheduled mode needs to report these using the EU-DPCCH periodically. In Table 1, we introduce a physical channel format in EU-DPCCH for reporting UE specific information. The reporting format is used by the UE to periodically reports the buffer status as well as pilot power information for scheduling purpose. The UE buffer status is also reported when EU-DPCCH is in scheduled mode. Note that the buffer status being reported is the MAC-EU-sc buffer status. The MAC-EU-rc buffer is transparent to the Node B and is never reported. The reporting cycle is determined by the RNC and can be changed by the RRC signaling. This is similar to the CQI reporting cycle on the uplink for HSPDA.

Table 1: Information Fields in the EU-DPCCH with Three Formats

Scheduled Mode		Rate-Controlled Mode		Reporting Mode	
Field	Num of Bits	Field	Num of Bits	Field	Num of Bits

MAC-EU-sc buffer status	3	Transport format	3	MAC-EU-sc buffer status	3
Transport format	3	TBS	3	Pilot transmit power information	6
TBS	3	Redundancy version	3		
Redundancy version	3	New data indicator	1	Data Priority Level	3
		HARQ Channel ID	2		

Each format contains 12 bits. The data priority level field in the reporting mode is to signal the Node B the priority of the packet in the MCS-EU-sc buffer. When operates in the extreme rate-controlled mode, the Transport format and TBS field in the EU-DPCCH rate-controlled mode is no longer needed. However, as discussed in section Error! Reference source not found., it is important to signal the Node B the MAC-EU-sc buffer status for better rate-control. We are not considering the extreme rate-control for now. Its pros and cons are for further study. The suggested physical channel format for EU-DPCCH is show in Figure 1.

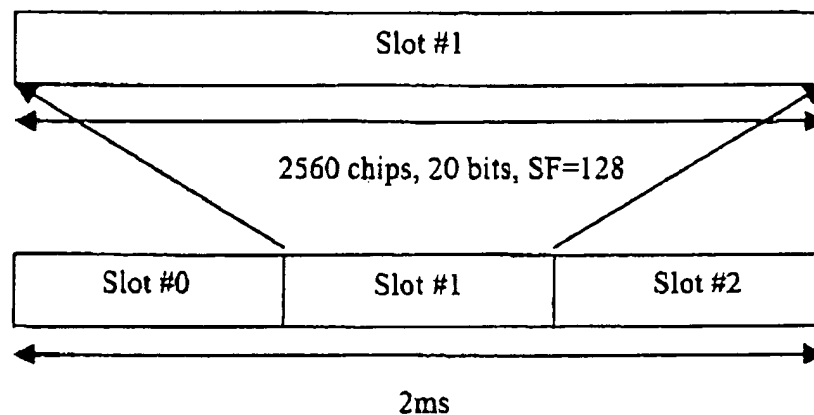


Figure 1: Subframe structure for the EU-DPCCH

It is suggested that the EU-DPCCH should have a fixed spreading factor of 128, a 2ms sub-frame size and BPSK modulation. This gives a total of 60 coded bits per sub-frame for 12 information bits. The bit mapping for the MAC-EU-sc buffer status is shown in Table 2.

Table 2: Mapping of the MAC-EU-sc buffer

Buffer Status	Buffer Size range (Bits)
---------------	--------------------------

000	(0, 240]
001	(120, 240]
010	(240, 480]
011	(480, 960]
100	(960, 1920]
101	(1920, 3840]
110	(3840, 7680]
111	(7680, 15360]

For the pilot transmit power information field, the transmit power is quantized to 6 bits. Since the maximum UE transmit power is usually restricted to 21 dBm, and the minimum transmit power is strict to -44 dBm, the quantization of the pilot power should be mapped to this range with the traffic-to-pilot ratio taken into account. Table 3 gives the details about the mapping.

Table 3 Pilot Report Update Quantization Levels

Pilot Update	Node B Interpretation of Pilot Power (dBm)	UE Pilot Power Range (dBm)
000000	16	Above 15.5
000001	15	14.5 to 15.5
000010	14	13.5 to 14.5
000011	13	12.5 to 13.5
000100	12	11.5 to 12.5
000101	11	10.5 to 11.5
000110	10	9.5 to 10.5
000111	9	8.5 to 9.5
001000	8	7.5 to 8.5
001001	7	6.5 to 7.5
001010	6	5.5 to 6.5
001011	5	4.5 to 5.5
001100	4	3.5 to 4.5
001101	3	2.5 to 3.5
001110	2	1.5 to 2.5
001111	1	0.5 to 1.5
010000	0	-0.5 to 0.5
010001	-1	-1.5 to -0.5
010010	-2	-2.5 to -1.5
010011	-3	-3.5 to -2.5
010100	-4	-4.5 to -3.5
010101	-5	-5.5 to -4.5
010110	-6	-6.5 to -5.5

Pilot Update	Node B Interpretation of Pilot Power (dBm)	UE Pilot Power Range (dBm)
010111	-7	-7.5 to -6.5
011000	-8	-8.5 to -7.5
011001	-9	-9.5 to -8.5
011010	-10	-10.5 to -9.5
011011	-11	-11.5 to -10.5
011100	-12	-12.5 to -11.5
011101	-13	-13.5 to -12.5
011110	-14	-14.5 to -13.5
011111	-15	-15.5 to -14.5
100000	-16	-16.5 to -15.5
100001	-17	-17.5 to -16.5
100010	-18	-18.5 to -17.5
100011	-19	-19.5 to -18.5
100100	-20	-20.5 to -19.5
100101	-21	-21.5 to -20.5
100110	-22	-22.5 to -21.5
100111	-23	-23.5 to -22.5
101000	-24	-24.5 to -23.5
101001	-25	-25.5 to -24.5
101010	-26	-26.5 to -25.5
101011	-27	-27.5 to -26.5
101100	-28	-28.5 to -27.5
101101	-29	-29.5 to -28.5
101110	-30	-30.5 to -29.5
101111	-31	-31.5 to -30.5
110000	-32	-32.5 to -31.5
110001	-33	-33.5 to -32.5
110010	-34	-34.5 to -33.5
110011	-35	-35.5 to -34.5
110100	-36	-36.5 to -35.5
110101	-37	-37.5 to -36.5
110110	-38	-38.5 to -37.5
110111	-39	-39.5 to -38.5
111000	-40	-40.5 to -39.5
111001	-41	-41.5 to -40.5
111010	-42	-42.5 to -41.5
111011	-43	-43.5 to -42.5
111100	-44	-44.5 to -43.5
111101	-45	-45.5 to -44.5
111110	-46	-46.5 to -45.5
111111	-47	Below -46.5

5. Compare your solution to those in the past, describing significant structural/functional differences. It is also helpful if you can identify deficiencies in the prior solution that are overcome by your solution.

There is no prior art on this

6. State any unique benefits achieved by your solution; i.e., performance, utility, durability, cost, etc.

Standard effected

7. Please answer the following:

- a) Will the invention be used in a standard (actual or de facto)?
 Yes ☒ No ☐ Not Sure ☐
- b) Is the invention a user feature of a present or imminent Lucent-commercial service or product offering for which no equally good alternatives exist in the marketplace?
 Yes ☒ No ☐ Not Sure ☐
- c) Is there actual or imminent use by others?
 Yes ☒ No ☐ Not Sure ☐
- d) Does the invention have the potential to be specified in a de facto or formal standard?
 Yes ☒ No ☐ Not Sure ☐
- e) Is the invention a communications signal format, protocol, or coding invention with some likelihood of use by others?
 Yes ☒ No ☐ Not Sure ☐
- f) Is the invention a broad concept or architecture for a system, device, material, product or service with few equally advantageous alternatives known?
 Yes ☒ No ☐ Not Sure ☐
- g) Is the invention a service or service feature?
 Yes ☐ No ☐ Not Sure ☒
- h) Is the invention a visible product feature or user feature?
 Yes ☒ No ☐ Not Sure ☐
- i) Is the invention a product feature which would appear in product documentation?
 Yes ☒ No ☐ Not Sure ☐
- j) Does the invention provide important benefits with few equally advantageous alternatives known?
 Yes ☒ No ☐ Not Sure ☐
- k) Is the invention an approach or solution that others may adopt or use?
 Yes ☒ No ☐ Not Sure ☐
- l) Is the invention in a product that others may copy?
 Yes ☐ No ☒ Not Sure ☐

8. Under what circumstances would it be economically advantageous for someone outside of Lucent to make, use or sell the invention?

It is standard affected.

9. How easily could Lucent DETECT, or SUSPECT, that someone was making, using or selling the invention?

It is standard affected.

10. How easily can the invention be designed around? In other words, how easily can another designer achieve the same functionality with a different design and for roughly the same costs?

Any other solutions would require changing the current DPCCH structure which is undesirable from standard's point of view.

11. List names and phone numbers of all inventors. Each inventor must make a contribution to the invention. Note that a person is not an inventor merely because he/she was a part of a project team, a project supervisor, etc.

Jung-Tao Liu, 973-386-3535, Rm. 14C-270, 67 Whippany Rd., NJ, JW9130000

12. Principal person to work with attorney: Jung-Tao Liu

Submitted by:

Inventor Signature: _____

Print Name: _____

Date: _____

Wireless Inventor Information Form

(To be completed by each inventor)

<u>Last Name:</u>	
<u>First Name:</u>	
<u>Middle Name:</u>	
<u>Suffix:</u>	
<u>HR ID No.:</u>	
<u>Company:</u>	
<u>Location / Room:</u>	
<u>Telephone No.:</u>	
<u>Org./Dept. No.:</u>	